

### 2.4.11 BUILDING COMPONENTS

The following are DPW preferred guidelines for various building components. Consultants should follow these guidelines for detailing construction. The old CSI numbers have been replaced with the latest CSI numbering system. The items covered include:

- Division 3 CONCRETE**
- Division 4 MASONRY**
- Division 5 METALS**
- Division 6 WOOD, PLASTIC and COMPOSITES**
- Division 7 THERMAL AND MOISTURE PROTECTION**
- Division 8 OPENINGS**
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- Division 21 FIRE SUPPRESSION**
- Division 22 PLUMBING**
- Division 23 HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)**
- Division 26 ELECTRICAL**
- Division 27 COMMUNICATIONS - Voice and Data Raceway Distribution**
- Division 28 ELECTRONIC SAFETY and SECURITY**
- Division 31 EARTHWORK**
- Division 32 EXTERIOR IMPROVEMENTS**
- Division 33 UTILITIES**

#### 2.4.11.1 Division 3 CONCRETE

All wire mesh, expanded metal, chairs shall be hot dipped galvanized or be plastic coated. Floor surfaces may vary from a true plane no more than 1/8" in 10 feet.

#### 2.4.11.2 Division 4 MASONRY

##### **Brick Veneer Backup**

Steel stud backup for brick veneer is not favored by the State. This method of construction has not proved its durability to the satisfaction of accepted authorities. Concrete Masonry Units (CMU) or Autoclaved Aerated Concrete (AAC) Masonry Units are preferred.

##### **Brick**

Brick shall meet or exceed ASTM C 216 requirements, Grade SW. ASTM C 216 permits the average strength of 5 brick to be 3000 psi with no one unit less than 2500. The State recommends brick have an average strength of 5000 to 8000 psi. ASTM permits maximum water absorption by 5-hour boiling to average 17%. The State prefers brick in the 6% to 10% range. Brick shall be tested in accordance with ASTM C 67 as "not effloresced". Brick with characteristics less than those stated must be proven durable in severe weather climates by inspection of a building using the brick that is at least 7 years old. The Initial Rate of Absorption (IRA) is not required by ASTM, however, the State requests this test in accordance with ASTM C 67. Brick test reports and certifications are required as part of a typical project submittal. The State also prefers at least one material property test for conformance of actual units delivered to the site.

##### **CMU Exterior Veneers and Single Wythe Units**

CMU for exterior use shall be classified as Heavy Weight (greater than 125 pcf) or Medium/Heavy Weight (about 115 pcf), have a minimum compressive strength of 3000 psi and be made of a dense exterior mix design. Lightweight pumice or other aggregates that

are susceptible to water penetration and resist integral water repellants are not recommended. Lightweight units may be used if a tight matrix design is used that meets the criteria of the Expanded Clay and Shale Institute, has proven durability and is warranted and certified by the manufacturer. All exterior CMU shall include a high-grade integral water repellent (IWR). Mortar for exterior CMU shall have a compatible water repellent. A water repellent coating applied to the completed CMU wall is also recommended. CMU veneers and single wythe walls shall have joint reinforcing (9 gage ladder is sufficient) at 16" o.c. and must be shown on the drawings and specifically stated in the specifications. Control joints shall be located at intervals of 16' to 20' and as recommended by industry standards. Other exterior coatings, electrometric coatings and paints or combinations of coatings with IRW may also be used with approval by the State.

### **Ties, Anchors, Reinforcement**

Corrugated sheet metal ties or anchors for masonry veneers are prohibited. Fixed and adjustable ties and anchors made of 3/16" diameter steel are recommended instead. Beam and column anchors shall be specified by the architect and designed by the engineer to meet the requirements of the code. It should be noted that column to masonry anchors may not be required if masonry walls are spanning vertically and do not require horizontal support. The code minimum for joint reinforcing is W 1.7 (#9) wire. W 2.8 (3/16") wire is not required unless the engineer has incorporated the wire size into the structural design of the wall. 3/16" wire can cause problems with maintaining joint size and coursing heights. Ladder type wire is satisfactory for most uses and shall be used in all grouted and reinforced CMU and masonry walls. Do not use truss type joint reinforcing in grouted and reinforced walls as it interferes with grout and rebar placement.

All of these products shall be hot dip galvanized after fabrication in accordance with the MSJC Specifications for Masonry Structures (ACI 530.1-02, ASCE 6-02/TMS 602-02) Section 2.4F. Use only hot dipped galvanized products, both exterior and interior.

### **Stone Panel Veneer**

Stone panel veneer shall have a minimum thickness of 1 1/4" thick and meet the requirements of the stone manufacturer. A licensed engineer shall design stone thickness, anchors, supports, joints and related accessories. Anchors shall be fabricated from 304 alloy stainless steel, brass or bronze.

### **General**

Masonry veneers (brick CMU, dimensioned stone) shall have a minimum air space of 1 3/4", with 2" the preferred minimum. The cavity is to be kept clean to permit efficient evacuation of moisture via the weep holes.

Provide open vertical joint weeps with vents, mesh type weep vents, honeycomb vents or equal type weeps immediately above flashing at a frequency of 16" O.C. Do not use tube or rope type weep holes. Provide weeps for air venting at the top of walls also. Provide mesh-type mortar drainage inserts that are designed to break mortar dropping, to allow water and moisture to flow out the weep holes and allow air circulation at all flashing locations. The use of mortar drainage inserts should not be misunderstood to mean additional mortar droppings are permitted in the air space. Use skilled masons trained to install brick veneers. Do not use pea stone as a drainage medium. Start masonry not less than 6" above finish grade. Provide metal drip edge at all flashing locations. Provide vertical and horizontal expansion joints as required and recommended by the International Masonry Institute and industry standards.

Review Moisture Control Guidelines and Details by the International Masonry Institute

### **Dampproofing / Waterproofing**

Coat the exterior face of the CMU backup with an asphalt emulsion (either spray or trowel applied) in strict accordance with the manufacturer's recommendations. Install rigid cavity insulation in accordance with the manufacturer's recommendations. Tape or seal all joints of rigid insulation.

### **Cleaning/Restoration**

Clean brick in accordance with masonry industry standards and as recommended by the manufacturer. Use clean potable water and bristle brushes for cleaning new brickwork. Power washing of new brickwork is also acceptable if approved by the manufacturer and in accordance with industry standards. If more aggressive measures are needed, the architect must approve them.

Cleaning agents and methods for cleaning existing brick shall be selected by a DPW - accepted authority and then tested on an inconspicuous part of the structure in the presence of DPW representatives. Modify this requirement to suit the interests of other agencies if the structure is, for instance, on The National Register of Historic Buildings. Never specify sandblasting of existing brick.

The existing mortar of a historic masonry building must be analyzed so that new mortar for restoration work can be matched to the original. Contact the State Historic Preservation Office (Refer to "Cultural Resources Section 2.4.2 of this Manual).

### **QUALITY CONTROL**

Use only mason contractors and craftworkers that are skilled and have performed work of equal scope to that specified on the project. It is desirable to engage contractors and craftworkers (bricklayers, cement masons, PCC installers, stone setters, foreman, supervisors, project managers and all trowel related workers) that have received or are involved in certified continuing education and training programs for the trade. Such programs shall meet the State's standards and be equal to those offered by the International Masonry Institute.

#### **2.4.11.3 Division 5 METALS**

##### **Lintels and Railings**

Hot-dip galvanize steel lintels and exterior railings after fabrication. Specify that lintel surfaces left exposed after installation and railings (interior and exterior) receive one primer and two finish coats of exterior grade enamel paint.

Do not use ferrous metals in toilet rooms, kitchens, natatoriums or other high humidity areas unless they are hot dip galvanized after fabrication. Alternatively use aluminum or type 302 or 304 stainless steel as suited to the given application.

##### **Handrails**

Acceptable materials are stainless steel, Alum. Or Color Galvanized with no open ends.

##### **Expansion Joints**

Interior floor covers shall be metal having no rubberized cork, urethane, vinyl or other joint filler. The vase member shall be designed to set the cover plate flush with the finish floor and have secure anchorage

#### **2.4.11.4 Division 6 WOOD, PLASTIC and COMPOSITES**

##### **Rough Carpentry**

Preservative treatment for all wood in damp areas on in contact with earth, concrete, masonry, plaster or roofing

### **Architectural Woodwork**

Specify architectural woodwork to be shop fabricated in accordance with The Architectural Woodwork Institute Premium Grade standards except for minor items or assemblies where a lower standard will provide an acceptable appearance for the given application.

Unless there is a compelling reason to do otherwise, specify cabinets (casework) to be fully shop finished according to an A.W.I. standard. It is recommended that plastic laminate clad casework have the interior surfaces, including shelves, finished with laminate of the types suited to the applications.

Specify every item of cabinet hardware by name, number and manufacturer. Specify finish.

### **Roof Sheathing**

Do not use fire-retardant treated plywood as roof sheathing under asphalt or wood shingles. It has been discovered that when the temperature exceeds 120 degrees (F), the material delaminates and is no longer capable of supporting the assumed loads.

## **2.4.11.5 Division 7 THERMAL AND MOISTURE PROTECTION**

### **Waterproofing / Damp-proofing**

Below grade foundation walls shall be damp proofed and or waterproofed to meet design requirements and or site conditions.

### **Roofing Requirements**

Roof Types for Various Pitches:

0" to 1/2"/12" 4-ply tar and gravel, modified bitumen, 60 mil. or reinforced 45 mil. single ply membranes.

1/2" to 1"/12" 4-ply asphalt and gravel, modified bitumen or single ply membrane as above.

1" to 4"/12" metal interlock roof panels, modified bitumen or single ply membrane as above.

4"/12" and greater shingles, slate, tile, metal interlock or single ply membrane when approved by manufacturer.

### **Warranties**

Refer to Division 1 General Requirements Section 01740 "Warranties and Bonds" for the warranty requirements for different roofing types.

### **Clearances**

Locate and place A/C units, fans, skylights, hatches and other roof-mounted items so that they may receive at least 8" high base flashing. Provide at least 24" clearance between the item and adjacent construction unless the design dictates otherwise and at least 12" under the item.

Do not place ducts or conduits directly on roofing. Support these items above the roof in conformance with details and specifications by the roofing materials' manufacturer.

### **Miscellaneous**

Limit penetrations to the least possible number.

Provide walkway pads to roof-mounted equipment that requires servicing. Use pad approved by the roofing materials' manufacturer.

If an IRMA type roof is used, either attach the insulation to the supporting construction or hold it in place with manufacturer-approved materials/methods to prevent the insulation from floating.

Polyvinyl chloride flashings are not acceptable Roofing System Justification

As part of the Schematic Design phase, the A/E shall submit a brief written description of the roofing type proposed for the project supported by reasons based on the following considerations:

Structure	Deck Type(s)	Anchoring	Insulation
Roof Load(s)	Existing Conditions	Guarantees	Cost
Slope(s)	Application	Reflectivity (color)	Flashings
Penetrations	Drainage		
Exposure: Local Atmosphere, Grease, Oil, Exhausts, Chemicals			
Fire safety: Torch Application			

### Problems

Sufficient attention has not been given to the problems associated with the re-roofing of an occupied building. Fumes given off by heated bitumen is the most common problem. It is recommended that all parties involved in the roofing of an occupied building confer before starting the work to provide open channels of communication.

Suggested remedies are: do the work when the building is unoccupied; keeping kettles covered; turning off fresh air intakes; keeping doors and windows closed.

Include a statement in the roofing section regarding end-of-day roofing conditions; i.e., treatment of edges of insulation and roofing.

### Removal of Asbestos Materials

If an existing roof that is to be replaced or repaired has been identified by DPW to contain asbestos materials, insert "Asbestos removal Roof" (refer to "Hazardous Materials Section 2.4.10 this Manual) into A/E specifications. The section may be inserted directly into the specification with project and section number added.

### Exterior Insulation Finish Systems (EIFS)

Do not use any of these systems "DryVit" and "STO", for example, where this material would be within reach of vandals. This effectively limits their use to building soffits.

### Concealed Gutters

Do not use concealed gutters if at all possible. If used to preserve design integrity with adjacent buildings, fit the gutters with scuppers to discharge rain water outboard.

## 2.4.11.6 Division 8 OPENINGS

### Hollow Metal Doors and Frames

In general, it is required that frames be SUAW (set up and welded). For existing openings, frames shall be KD (knock down) with mitered corners and positive attachment devices to produce hairline uniform joints.

Fabricate exterior doors with 16 gauge, galvanized steel faces, and frames with 14 gauge galvanized steel. The door surface shall be perfectly flat, showing no oil canning or weld spots. Interior doors shall be 18 gauge with 16 gauge frames. These gauge sizes do not apply to Department of Correction (DOC) projects.

Refer to DOC for requirements for security door testing.

### **Wood and Mineral Core Fire Doors**

Exterior Wood doors are not recommended unless they are a replacement on an historic structure.

The construction components in wood and mineral core fire door shall not be less than following requirements:

- Top and bottom rails shall be not less than 5" wide solid wood.
- Styles shall be triple plywood to provide secure anchorage for screw fasteners.
- Lock blocks shall be not less than 5" x 12" solid wood.

### **Finish Hardware**

In general, hardware for renovated buildings and for additions to existing buildings shall be the same as used in the existing building, including finish. This applies to locksets, exit bolts and closers so that keying shall be consistent, among other things. Order not less than 1-1/2 pair of hinges per door leaf up to 7'0" high and one additional for each additional 30" in height or fraction thereof. Use only commercial grade hardware.

Require that closers and other surface mounted hardware on mineral core doors be though-bolted, or specify that these doors have 5 1/2" top and bottom rails and lock blocks.

Do not use in-floor closers or concealed-in-head closers unless there are compelling reasons for there use.

For jail or prisons, specify detention hardware (locks for cells, for example) with the cells and related items in Division 13.

### **Windows**

Windows shall provide a reasonable measure of energy efficiency that is, at minimum, consistent with the required "U" values of the particular building. Use thermally broken metal windows with insulating glass. Use tinted and Low-E glass only where their use can be justified.

## **2.4.11.7 Division 9 FINISHES**

### **General**

Do not use single layer gypsum board on partitions in areas where vandalism or other abuse could be expected. Select materials for these areas that will not fail due to the expected level of abuse. Use materials, if available, that offers a multi-year warranty against abuse. "Failure" means change to the degree that the material can no longer serve its intended function.

Walls of toilet rooms and rooms which house water-using fixtures in institutions and other high-use facilities must be designed with the assumption that there will be water leaks. Do not use moisture-resistant gypsum board. Instead, use cement based backer board ("Durock", for example) as the substrate. The use of steel studs should be discouraged; experience has shown that they readily deteriorate in the presence of moisture starting where the stud is cut or where screws penetrate their zinc coating. Alternate support could be wood studs, codes permitting. Strong consideration shall be given to using concrete masonry units with a ceramic tile or two-part epoxy finish.

Use hard surface floors, such as ceramic tile or two-part epoxy, and marble thresholds, at toilets and bathrooms.

Specify a minimum 3-coat paint application. Select paints suited to the given substrate. Also, specify dry film thickness for each coat.

### Commercial Carpet Guidelines

#### Direct Glue Down Application:

(a) Carpet Type.

Tufted: 100% C-F nylon, level loop with permanent anti-static and soil hiding features

Face Yarn: Antron III, also IV, Zeftron or Ultron

Yarn Ply: 3 (min.)

Face Yarn Weight: 28 oz./sq.yd.

Total Weight: 67 oz./sq.yd.

Dye Method: Yarn

Backing: Primary-Synthetic Secondary-Jute or woven Synthetic

Recommended Traffic Designation: Heavy

(b) Installation: Cement to the floor, following an approved seaming diagram submitted by the carpet contractor, with an adhesive recommended by the carpet manufacturer. Carpet pile direction shall be consistent, and installed in the largest possible lengths and widths to minimize the number of cross and length seams.

(c) Seams: Seams should not be perpendicular to openings. Seams occurring at doors, parallel to doors, should be centered under doors. Cross seams should be made with a waterproof contact adhesive. All workmanship and the entire installation must meet the standards prescribed by the manufacturer and the carpet and rug institutes recommended standards and procedures.

#### Tackless Application With Cushion

(a) Carpet Type. Same as Direct Glue-Down Applications (above)

(b) Cushion: Carpet cushion shall consist of hair and jute. No seconds or imperfections will be acceptable. Hair and fiber cushion shall be of all new selected, clean washed cattle hair and fiber, moth proofed. Weight not less than 40 ounces per square yard, and shall be Crown "Stanton" or approved equal.

(c) Installation: Install following an approved seaming diagram submitted by the carpet contractor over a layer of cushion. Use tackless strips around room perimeter. Spot-cement cushion to floor to prevent rolling and shifting. Cushion seaming should be laid out at right angles to carpet seams.

(d) Seams: Seaming is the same as in Direct Glue-Down Applications (above) except all parallel seams shall be hot-melt taped using Bond, Taylor, Roberts or equal, applied as recommended by the carpet manufacturer.

### Requirements of Regulatory Agencies

(a) Flammability: Carpeting shall have an average critical radiant flux of greater than or equal to 0.45 watts per square centimeter N.F.P.A. 253, and specific optical density of 450 or less, N.F.P.A. 258. Manufacturers' test reports encompassing fire hazard classification, sound absorption, and static control qualities shall be submitted to the State of Connecticut before installation.

### **Guarantees**

(a) The carpet contractor shall re-stretch carpet, repair seams, joints and edges, if required, once after the original installation is completed at no additional charge to the State of Connecticut. The exact time for this work shall be left to the discretion of the using State Agency.

(b) The carpet contractor shall submit a 3-year written guarantee assuring the State of Connecticut that the carpet will remain tight and free of wrinkles; and to correct any other condition which may appear due to faulty installation procedures. Refer to Division 1 General Requirements Section 01740 "Warranties and Bonds" for the warranty requirements for carpeting.

### **2.4.11.8 Division 10 SPECIALTIES**

### **2.4.11.9 Division 11 EQUIPMENT**

Also refer to Equipment Guidelines, Section 2.1.5 this Manual

### **2.4.11.10 Division 12 FURNISHING**

### **2.4.11.11 Division 13 SPECIAL CONSTRUCTION**

### **2.4.11.12 Division 14 CONVEYING SYSTEMS**

#### **Elevators**

The State Elevator Inspector has noted in the past, Fire Protective Spray on coatings have had a flaking problem clogging elevator machinery equipment causing elevator malfunctions. When using spray on fireproofing, be aware of past performance problems. Recommend other alternatives in the elevator machine rooms. An "Elevator Agreement" shall be included in all specifications. This agreement allows the proper diagnostic tools to become the property of the State of CT. An electronic copy of the "Elevator Agreement" will be forwarded to the Consultant along with other specification sections for doing DPW projects.

### **2.4.11.13 Division 21 FIRE SUPPRESSION**

#### **General**

Sprinkler Systems, Standpipe Systems, Fire Pumps and Water Supplies shall be designed in accordance with the State Building Code and Connecticut Fire Safety Code.

Whether the Engineer provides only a performance specification or a detailed fire protection system drawings, the following design requirements must be included in the specifications.

All of the information outlined in NFPA 13, 13D or 13R (Specific editions enforced by Codes) shall be provided on the shop drawings.

If early suppression fast response sprinkler heads are used, the information on roof slope **shall** be stated on the shop drawings.

Separate hydraulic calculations shall be provided for areas such as shops, kitchen and mechanical rooms, which generally have a higher design density than the remainder of the facility.

Walk in freezers and coolers shall be provided with dry pendant sprinkler heads.



A minimum of an 8-PSI safety cushion shall be provided **in the hydraulic Calculations**, if this **requirement alone** will result in having to install a fire pump, **consult with DPW**.

Mechanical Rooms shall be designed for Ordinary Hazard Group 2.

In general, incidental storage areas should be designed for Ordinary Hazard Group 2. Incidental storage is situations such as the storage of kitchen supplies or office supplies.

Elevator shafts shall be sprinkled in conformance with NFPA 13 **or as revised in the current state codes**.

Electrical rooms shall be protected in conformance with NFPA 13 **or as revised in the current state codes**.

Areas such as woodworking and machine shops should be designed for Ordinary Hazard Group 2, in conformance with NFPA 13 **or as revised in the current state codes**.

Inspectors test outlets, main drains and floor control test assembly drains, shall discharge directly to the outside.

Sprinkler protection shall be provided for the area underneath overhead doors (when the door is in the open position); in addition to ceiling sprinkler protection.

Earthquake bracing shall be provided as required by the State Building Code. NFPA 13 guidelines shall be followed. The shop drawings shall show proper arrows, reflecting location and type of bracing.

All sprinkler, fire pump, smoke detector and other fire alarms should transmit either to a central or remote station or **whenever possible** to a 24 hour constantly attended station (i.e., guard station).

Sprinkler system alarms shall include valve tamper, water flow, low temperature, and for dry pipe systems low air pressure. Alarm, at a minimum should be zoned per floor and large floors may be subdivided into more than one zone.

NFPA 20 describes and lists alarms to be provided for fire pumps and engine drive controllers.

Shop drawings submitted for approval shall include complete hydraulic calculations and shall be stamped by a professional engineer licensed in the State of Connecticut.

Detailed information shall be given, on the engineer's contract drawings, in reference to:  
Operations such as spray painting, shops and storage.

Storage information should include a description of products stored, packaging material for product, storage arrangement (i.e., racks, palletized, etc.), storage height, aisle width, clearance from top of storage to underside of roof or ceiling, whether or not encapsulated. This includes flammable materials.

If there is a pre-action system interconnected with smoke detectors, the details of this arrangement shall be provided in the contract of how the systems are interconnected; how the systems operates and the sequence of operation.

Refer to "Fire Protection and Water Supply" Section 2.4.7 in this Manual.

### 2.4.11.14 Division 22 PLUMBING

### 2.4.11.15 Division 26 ELECTRICAL

Metal conduit shall be used for all wiring. MC cable shall only be used to connect to fixtures with MC cable lengths not exceeding 8 feet. Consult with your Project Manager if deviating from this requirement.

All fire sealant is required to fill-in wall and floor conduit penetrations.

### 2.4.11.16 Division 27 COMMUNICATIONS - Voice and Data Raceway Distribution

#### General

This Section of the Specifications shall be used by the Engineer to describe a complete raceway distribution system, for the Voice and Data communications systems.

Under this Section of the specifications, the Engineer shall specify:

The Telephone Service conduits from the Utility, or Site Distribution, to the Building Main Telephone (BMDF) Room. (NOTE: A minimum of one 4-inch active and one 4-inch spare conduit shall be specified for each project).

Vertical and Horizontal raceways between the Main Telephone Room (BMDF) and the Intermediate Phone Rooms (IDF's). (A minimum of two 4-inch conduits shall be specified).

Vertical and Horizontal raceways between the IDF rooms on each floor. (A minimum of two 4-inch conduits, or sleeves shall be specified).

Horizontal raceway distribution between the IDF's, and the workstations on that floor. See "Station Raceway Distribution" below, for additional input.

All raceway fittings, outlet boxes, junction boxes, pull boxes, etc. required for the voice and data raceway system. Standard size outlet box shall be 4" x 4" with 1" conduit raceway and pull string.

All Grounding and Bonding required by NEC Code.

All fire sealant is required to fill-in wall and floor conduit penetrations.

All Electrical & Environmental requirements for the BMDF and IDF rooms, as outlined in the State Telecommunications Wiring Standard, and directed by DPW Telecommunications.

Identify whether voice/data wiring and terminations are part of this contract or not.

Voice/data communication systems (raceways and/or wiring) shall be designed per EIA/TIA Industry standards.

#### Site Distribution

Site utility raceway distribution for the Telephone and Data systems shall be the responsibility of the A/E. (Provide details.)

Telephone and Data duct-banks, manholes etc. shall be coordinated with all other utilities (i.e. Electric, CATV etc.).

Installation of duct-banks, manholes, etc. shall be specified under division 2 and 3 of the contract specifications.

### **Station Raceway Distribution**

Raceway distribution between the workstations and the IDF's may be provided in one of the following methods:

- (a) Ceiling Distribution
- (b) Raised Floor System
- (c) Under-floor Ducts
- (d) Exposed and surface mounted raceways
- (e) Cellular Floor System

Unless otherwise directed by DPW, the Ceiling Distribution system, utilizing raceways, cable trays or similar cable management methods, shall be the preferred State method.

Ceiling Distribution system shall consist of:

Conduit stub-ups from outlet boxes to accessible ceilings.

Home-run conduit from outlet boxes to IDF's in Non-accessible ceilings

Surface mounted raceways, where ceilings are not accessible and where approved by DPW.

Where stub-ups are provided above the ceiling, grouping of station cables shall be placed in cable-trays, or wire-ways, back to IDF/BMDF. Engineer shall design appropriate raceway system to facilitate good cable management practices.

### **2.4.11.17 Division 28 ELECTRONIC SAFETY and SECURITY**

Also refer to Building Security, Section 2.1.6 this Manual

### **2.4.11.18 Division 31 EARTHWORK**

### **2.4.11.19 Division 32 EXTERIOR IMPROVEMENTS**

### **2.4.11.20 Division 33 UTILITIES**

Also Refer to Utility Hookups, Section 2.3.3 this Manual